LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A receiver circuit for providing a decoded output from a received discrete multi-tone modulated input signal, the input signal being received from a communication channel having noise thereon, the input signal comprising digital data, the circuit comprising:

a first stage having a frequency response for applying a discrete Fourier transform to the input signal;

a second stage for receiving an output signal from said first stage and per-bin decoding said signal based on a maximum likelihood sequence estimation (MLSE) algorithm so as to recover said digital data; and

a time domain windowing stage for applying time domain windowing to said input signal prior to said first stage.

2. (Original) The circuit of claim 1, further comprising a time domain equalizing stage prior to said first stage.

3. (Original) The circuit of claim 2, wherein said time domain windowing stage is disposed between said time domain equalizing stage and said first stage.

4. (Original) The circuit of claim 1, wherein said windowing stage employs the Hanning type window.

5. (Original) The circuit of claim 1, further comprising a per-bin equalizing stage prior to said second stage.

6. **(Original)** The circuit of claim 5, wherein said per-bin equalizing stage comprises a bank of per-bin equalizers corresponding respectively to active bins of an output signal from said first stage.

7. **(Original)** The circuit of claim 6, wherein each per-bin equalizer comprises a finite impulse response filter.

8. **(Original)** The circuit of claim 1, wherein said second stage applies PRS decoding, bin-by-bin along the frequency axis for each discrete multi-tone symbol in said digital data.

9. **(Original)** The circuit of claim 1, wherein said second stage applies an exhaustive MLSE search procedure.

10. **(Original)** The circuit of claim 1, wherein said second stage applies the Viterbi algorithm.

11. **(Original)** A receiver circuit for providing a decoded output from a received discrete multi-one modulated input signal, the input signal being received from a communication channel having noise thereon, the input signal comprising digital data, the circuit comprising:

a first stage having a frequency response for applying a discrete Fourier transform to the input signal;

a second stage for receiving an output signal from said first stage and per-bin decoding said signal based on a maximum likelihood sequence estimation algorithm so as to recover said digital data; and

a frequency domain windowing stage disposed between said first stage and said second stage.

12. **(Original)** The circuit of claim 11, further comprising a time domain equalizing stage prior to said first stage.

13. (Original) The circuit of claim 11, further comprising a per-bin equalizing stage prior to said second stage.

14. (Original) The circuit of claim 13, wherein said per-bin equalizing stage comprises a bank of per-bin equalizers corresponding respectively to active bins of an output signal from said first stage.

15. (Original) The circuit of claim 14, wherein each per-bin equalizer comprises a finite impulse response filter.

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16. (Original) The circuit of claim 13, wherein said frequency domain windowing stage is disposed between said first stage and said per-bin-equalizing stage.

17. (Original) The circuit of claim 11, wherein said second stage applies PRS decoding, bin-by-bin along the frequency axis for each discrete multi-tone symbol in said digital data.

18. (Original) The circuit of claim 11, wherein said second stage applies an exhaustive MLSE search procedure.

19. (Original) The circuit of claim 11, wherein said second stage applies the Viterbi algorithm.

20. (Original) The circuit of claim 11, wherein said windowing stage employs the Hanning type window.

21. (Currently Amended) A receiver circuit for providing a decoded output from a received discrete multi-tone modulated input signal, the input signal being received from a communication channel having noise thereon, the input signal comprising digital data, the circuit comprising:

a first stage having a frequency response for applying a discrete Fourier transform to the input signal; and

a second stage for receiving an output signal from said first stage and per-bin decoding said signal based on a maximum likelihood sequence estimation (MLSE) algorithm so as to recover said digital data;

wherein said maximum likelihood sequence estimation (MLSE) algorithm includes a calculation of state metrics and is modified to include subtraction of estimated noise samples using noise prediction coefficients.

22. (Original) The circuit of claim 21, wherein said noise prediction coefficients are the same for all bins.

23. (Original) The circuit of claim 21, wherein at least two bins or groups of bins have different respective noise prediction coefficients.

24. (Original) The circuit of claim 21, wherein said modified MLSE algorithm performs cancellation of noise received with said input signal from said communication channel.

25. (Original) The circuit of claim 24, wherein said noise is additive noise, additionally colored by a windowing procedure.

26. (Original) The circuit of claim 25, wherein said windowing procedure is time domain windowing.

27. (Original) The circuit of claim 25, wherein said windowing procedure is frequency domain windowing.

28. (Original) A method in a receiver circuit for providing a decoded output from a received discrete multi-tone modulated input signal, the input signal being received from a

communication channel having noise thereon, the input signal comprising digital data, the method comprising the steps of:

applying time domain windowing to said input signal; then

applying a discrete Fourier transform to the input signal; and then

per-bin decoding said signal based on a maximum likelihood sequence estimation (MLSE) algorithm so as to recover said digital data.

29. (Original) The method of claim 28, further comprising the step of time domain equalizing said input signal prior to said Fourier transform step.

30. (Original) The method of claim 29, wherein said time domain windowing step is performed between said time domain equalizing step and said Fourier transform step.

31. (Original) The method of claim 28, wherein said windowing step employs the Hanning type window.

32. (Original) The method of claim 28, further comprising the step of per-bin equalizing said signal prior to said per-bin decoding step.

33. (Original) The method of claim 28, wherein said per-bin decoding step comprises PRS decoding, bin-by-bin along the frequency axis for each discrete multi-tone symbol in said digital data.

34. (Original) The method of claim 28, wherein said per-bin decoding step applies an exhaustive MLSE search procedure.

35. (Original) The method of claim 28, wherein said second stage applies the Viterbi algorithm.

36. (Original) A method in a receiver circuit for providing a decoded output from a received discrete multi-tone modulated input signal, the input signal being received from a communication channel having noise thereon, the input signal comprising digital data, the method comprising the steps of:

applying a discrete Fourier transform to the input signal; then

applying frequency domain windowing to said signal; and then

per-bin decoding said signal based on a maximum likelihood sequence estimation (MLSE) algorithm so as to recover said digital data.

37. (Original) The method of claim 36, further comprising the step of time domain equalizing said input signal prior to said Fourier transform step.

38. (Original) The method of claim 36, further comprising the step of per-bin equalizing said signal prior to said per-bin decoding step.

39. (Original) The method of claim 38, wherein said frequency domain windowing step is performed between said Fourier transform step and said per-bin equalizing step.

40. (Original) The method of claim 36, wherein said per-bin decoding step applies PRS decoding, bin-by-bin along the frequency axis for each discrete multi-tone symbol in said digital data.

41. (Original) The method of claim 36, wherein said per-bin decoding step applies an exhaustive MLSE search procedure.

42. (Original) The method of claim 36, wherein said per-bin decoding step applies the Viterbi algorithm.

43. (Original) The method of claim 36, wherein said windowing step employs the Hanning type window.

44. (Original) A method in a receiver circuit for providing a decoded output from a received discrete multi-tone modulated input signal, the input signal being received from a communication channel having noise thereon, the input signal comprising digital data, the method comprising the steps of:

applying a discrete Fourier transform to the input signal; and then

per-bin decoding said signal based on a maximum likelihood sequence estimation algorithm so as to recover said digital data;

wherein said maximum likelihood sequence estimation (MLSE) algorithm includes a calculation of state metrics and is modified to include subtraction of estimated noise samples using noise prediction coefficients.

45. (Original) The method of claim 44, wherein said noise prediction coefficients are the same for all bins.

46. (Original) The method of claim 44, wherein at least two bins or groups of bins have different respective noise prediction coefficients.

47. (Original) The method of claim 44, further comprising the step of utilizing said modified MLSE algorithm to perform cancellation of noise received with said input signal from said communication channel.

48. (Original) The method of claim 47, wherein said noise is additive noise, additionally colored by a windowing procedure.

49. (Original) The method of claim 48, wherein said windowing procedure applies time domain windowing.

50. (Original) The method of claim 48, wherein said windowing procedure applies frequency domain windowing.